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COTTON ROOT ROT

TEXAS
AGRICULTURAL
EXTENSION
SERVICE

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Cotton Root Rot

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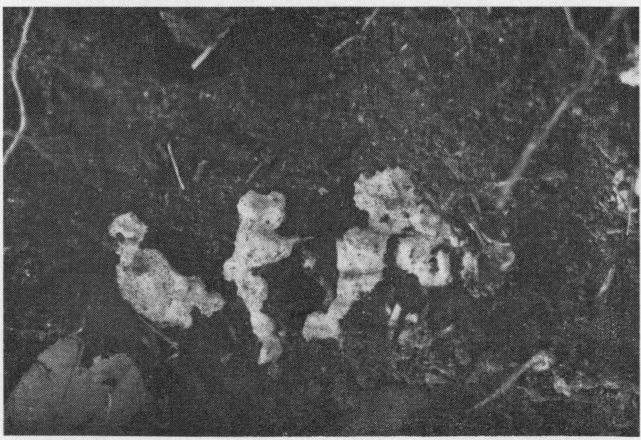
COTTON ROOT ROT is one of the most common plant diseases in Texas. The disease generally is found throughout the State except in the Panhandle and High Plains. It is very prevalent in heavy, alkaline soils. About 80 percent of the wild and cultivated plants are susceptible in varying degrees. No estimates are available on losses. The disease seldom can be cured after it attacks a plant. It is combatted by growing resistant or immune plants, drying-out and acidifying the soil and by certain cultural practices.

IDENTIFICATION

Plants suddenly die after the first symptoms of wilting. When pulled from the soil, the bark of the roots is decayed and brownish, and wooly strands of fungus frequently are on the surface. Under field conditions, the disease appears on spots which spread rapidly. The brownish, wooly



Disease spore mats on soil surface.

strands of the fungus are more difficult to observe and are fewer in number on trees and shrubs than on cotton. Affected plants die suddenly, often after having made excellent growth. Large trees may die more slowly. On small plants,

death occurs within a few days of the first wilting. In affected plants, the whole root system decays and the plants slip out of the soil with little pulling effort. Under moist conditions, spore mats sometimes appear on the soil surface without diseased plants. (See illustration.) These mats are 2 to 12 inches in diameter, at first snow-white and cottony; later they appear tan and powdery. On large roots and tubers there are numerous small cushion-like sclerotia or resting bodies about the size of a pinhead, at first light colored, but later appear dark and warty. The fungus generally invades new areas by continued slow growth through the soil from plant to plant. Occasionally it may spread more rapidly on the roots of transplanted infected plants. The fungus can live in the soil for many years. It is often found as deep in the soil as roots penetrate. The disease also is known as the Texas root rot or Phymatotrichum root rot.

CONTROL ON FIELD CROPS

On alfalfa, dead spots of plants occur in fields, usually in a circular pattern. Brownish, fuzzy strands of the fungus often appear on affected roots. The bark is dead and rotted on the tap root. The disease occurs in warm weather. For control of the disease, grow alfalfa as an annual, especially in South Texas, or plant badly infested land to nonsusceptible crops such as cereals and grasses. Grow sorghum and grain crops preceding alfalfa. Plant on root-rot free land. See your county agricultural agent about control of root rot on cotton.

CONTROL ON FRUITS AND NUTS

In locating new orchards (apple, pear, peach, fig or pecan), as well as vineyards, berry patches and nurseries, select land that is not infected with cotton root rot. To make sure the fungus is absent, an indicator crop of cotton might be planted and observed for root rot for one season before the above-named plants are introduced.

In some cases, valuable ornamental plants and orchard trees have been treated successfully even after root rot infection had taken place. The tree (or shrub) first is pruned back and a circular ridge (equal in diameter to the top of the plant) of soil is built some distance away from the trunk. One pound of ammonium sulfate for each 100 square feet of surface within this ridge is worked

into the soil. The area within the ridge is filled with water to a depth of about 4 inches. Treatment and watering should be repeated after 5 or 10 days. Not more than two treatments should be applied in the same season. Frequent watering should follow this treatment to prevent drouth injury. Acidifying the soil with sulfur around susceptible trees or shrubs may help to delay or prevent root rot infection in areas where the disease is prevalent. Fruits and nuts that are immune or resistant should be grown.

Ratings of fruits and nuts with reference to relative resistance follow:

Immune: Date palm, strawberry.

Resistant: Dewberry, kumquat, weeping mulberry, orange (hardy, Mexican and sour).

Moderately susceptible: Blackberry, lemon, satsuma orange, peach, pecan (young more susceptible than old) and plum.

Highly susceptible: Apricot, sour cherry, grapefruit, lime, white and Russian mulberry, nectarine, orange, quince, tangerine, walnut (black, English, Japanese and Persian).

Extremely susceptible: Apple, fig, black and red mulberry, pear and Mexican walnut.

CONTROL ON VEGETABLES

Use immune or resistant vegetables.

Immune: Asparagus, Chinese cabbage, garlic, leek, onion and pumpkin.

Resistant: Broccoli, brussel sprouts, cabbage, cantaloupe, cauliflower, celery, common stock, cucumber, kale, mustard greens, rape, spinach and squash.

Moderately susceptible: Artichoke, carrot, charlock, eggplant, Irish potato, kohlrabi, lettuce, okra, parsley, radish, rutabaga, turnip, watermelon and tomato.

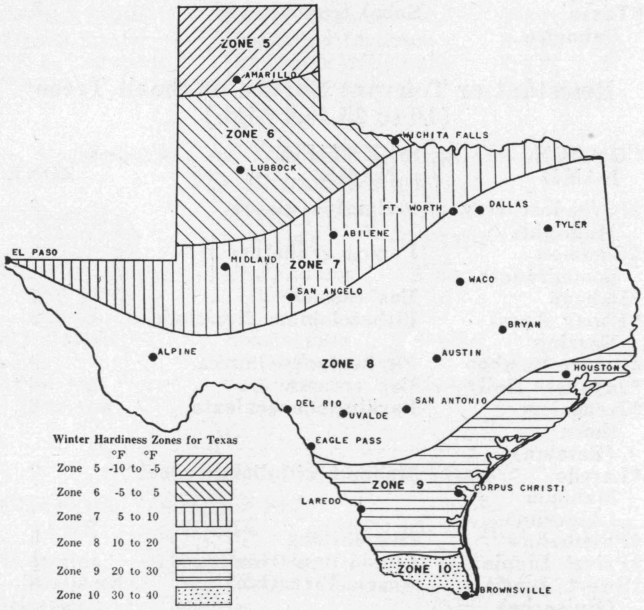
Most other vegetables not listed are highly susceptible or extremely susceptible. Susceptible vegetables grown during the cool season are not affected.

CONTROL ON ORNAMENTAL PLANTS

See page 3 for chemical treatment. The use of an indicator crop, or the ammonium sulfate and sulfur soil treatments might be used where expensive ornamental plantings are to be made.

Ornamental plantings of cotton root rot susceptible species should be made with isolated plants or groups of plants, rather than in continuous rows as hedges. When the disease occurs in an ornamental planting, diseased plants may be replaced with resistant species.

The scientific name, corresponding common name and zone number are listed for each resistant or immune tree or plant. Consult the map to determine the zone in Texas in which you wish to grow the plant. (Any plant with that zone number or a lower zone number can be used. Those with higher zone numbers are not recommended for that particular area.) Determine the desired use or locations for the plant to be selected. Turn to the size group in the list that includes plants in size desired. Determine the size plant (at maturity) that you require for that purpose. Check the asterisks on the left side of the list indicating whether the plant is evergreen, semi-evergreen or deciduous. Determine which type of plant you desire. Select the names of the plants suited for your particular purpose and area. Find a description or a picture of that plant in a garden dictionary, garden encyclopedia, garden periodical or nursery catalog. Select the plant you like best from the group you have found suitable for your use and area.



Zone map is based on winter hardiness zones in the United States. Zones 1 through 4 fall outside Texas to the north.

Resistant or Tolerant Trees (30 feet high and over)

COMMON NAME	SCIENTIFIC NAME	ZONE
*American Holly	Ilex opaca	5
‡American Planetree	Platanus occidentalis	5
*Atlas Cedar	Cedrus altantica	6
*Canarydate	Phoenix canariensis	8
‡Cedar Elm	Ulmus crassifolia	6
*Date	Phoenix dactylifera	10
*Eastern Redcedar	Juniperus virginiana	2
*English Holly	Ilex aquifolium	6
‡Honey Mesquite	Prosopis glandulosa	8
‡Japanese Pagodatree	Sophora japonica	4
‡Japanese Timber Bamboo	Phyllostachys bambusoides	7
‡Kentucky Coffeetree	Gymnocladus dioicus	4
*Live Oak	Quercus virginiana	7
*Mexican Washington-palm	Washingtonia robusta	10
‡Osageorange	Maclura pomifera	5
*Rocky mountain Juniper	Juniperus scopulorum	5
‡Royal Paulownia	Paulownia tomentosa	5
‡Sugar Hackberry	Celtis laevigata	5
*Texas Palmetto	Sabal texana	8

Resistant or Tolerant Shrubs or Small Trees (10 to 25 feet high)

COMMON NAME	SCIENTIFIC NAME	ZONE
‡Barbadoscherry Malpighia	Malpighia glabra	8
‡Common pomegranate	Punica granatum	8
*Dahoon	Ilex cassine	7
*Ebony Apes-Earring	Pithecolobium flexicaule	9
‡Golden Bamboo	Phyllostachys aurea	9
*Japanese Holly	Ilex crenata	6
‡Jerusalem thorn (Retama)	Parkinsonia aculeata	8
*Laredo Mahonia (Algerita)	Mahonia trifoliolata	7
‡Possumhaw	Ilex decidua	5
†Privet Lippia	Lippia ligustrina	8
†Sweet Acacia (Huisache)	Acacia farnesiana	8
*Yaupon	Ilex vomitoria	7

*Evergreen, †Semi-evergreen, ‡Deciduous

Resistant or Tolerant Medium, Small and Dwarf Shrubs (1 to 9 feet high)

COMMON NAME	SCIENTIFIC NAME	HGT.	ZONE
‡American Beautyberry	Callicarpa americana	3-5 ft.	4
‡Autumn Sage	Salvia greggi	1-3 ft.	7
‡Barbadoscherry Malpighia	Malpighia glabra	6-9 ft.	8
*Cypress Lavender-cotton	Santolina chamaecyparissus	1-3 ft.	7
*Goldflower	Hypericum calycinum	1-3 ft.	7
‡Indiancurrant Coralberry	Symphoricarpos orbiculatus	1-3 ft.	2
*Laredo Mahonia	Mahonia trifoliolata	5-6 ft.	7
‡Morrow Honeysuckle	Lonicera morrowi	6-9 ft.	2
*Pfitzer Chinese Juniper	Juniperus chinensis Pfitzer	6-9 ft.	4
*Red Hesperaloe	Hesperaloe parviflora	1-3 ft.	7
*Rosemary	Rosmarinus officinalis	3-5 ft.	6
†Russian Olive	Eleagnus augustifolia	6-9 ft.	3
†Selloa Pampasgrass	Cortaderia selloana	6-9 ft.	8
‡Sweet Mockorange	Philadephus coronarius	6-9 ft.	5
‡Tatarian Honeysuckle	Lonicera tatarica	6-9 ft.	3
*Ternate Mexican-orange	Choisya ternata	6-9 ft.	7
‡Texas Sage	Salvia coccinea	1-3 ft.	7
*Texas Sotol	Dasylirion texanum	3-5 ft.	7
*True Lavender	Lavandula officinalis	1-3 ft.	5
*Yucca	Yucca spp.	1-3 ft.	4

Resistant or Tolerant Ground Covers (to 12 inches high)

COMMON NAME	SCIENTIFIC NAME	METHOD	ZONE
*Bowles Common Periwinkle	Vinca minor Bowles	Vine	7
*Rosemary	Rosmarinus officinalis	Shrub	6
‡Trailing Lantana	Lantana sellowiana	Shrub	9

Resistant or Tolerant Vines

COMMON NAME	SCIENTIFIC NAME	METHOD	HGT.	ZONE
†Carolina Snailseed	Cocculus carolinus	Climbing	12 ft.	6
†Scarlet Clematis	Clematis texensis	Tendrils	6 ft.	4

*Evergreen, †Semi-evergreen, ‡Deciduous

Some Resistant or Tolerant Flowers

COMMON NAME	SCIENTIFIC NAME
Begonia	Begonia gracillis
Buttercup	Ranunculus macranthus
Buttercup	Ranunculus muricatus
Buttercup	Ranunculus parviflorus
Candy tuft	Iberis spp.
Canna	Canna spp.
Celery-leaved buttercup	Ranunculus sceleratus
Clematis	Clematis drummondii
Columbine	Aquilegia longissima
Common larkspur	Delphinium spp.
Common zinnia	Zinnia elegans
Creeping buttercup	Ranunculus repens
Early crowfoot	Ranunculus fascicularis
Florists' cyclamen	Cyclamen indicum
Freesia	Freesia spp.
Gladiolus	Gladiolus spp.
Globe-flower	Trollius europaens
Hyacinth	Hyacinthus orientalis
Iris	Iris spp.
Lady Washington geranium	Pelargonium domesticum
Lesser spearwort	Ranunculus pusillus
Lily	Lilium spp.
Many-flowered spearwort	Ranunculus oblongifolius
Marigold	Togetes spp.
Mexican zinnia	Zinnia angustifolia
Narcissus	Narcissus spp.
Nasturtium	Tropaeolum majus
Oriental poppy	Papaver oriental
Pansy	Viola tricolor
Petunia	Petunia hybrida
Phlox	Phlox spp.
Snapdragon	Antirrhinum majus
Strawflower	Helichrysum bracteatum
Sweet alyssum	Lobularia maritima
Sweet pea	Lathyrus odoratus
Sweet william	Diathus barbatus
Texas bluebonnet	Lathyrus subcarnosus
Touch-me-not, garden balsam	Impatiens balsamina
Tulip	Tulipa gesneriana
Violet	Viola spp.
Wedge-leaved buttercup	Ranunculus cuneiformis

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